Assessment, Management, and Reporting of Animal and Bat Bites in King County: Information for Health Care Providers

Prepared by Public Health – Seattle & King County

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Section 1 - Introduction

Prevention of human rabies depends on eliminating exposure to rabid animals and providing exposed persons with prompt local treatment of their wounds, combined with appropriate rabies treatment consisting of both active and passive immunization. A health care provider or emergency room should be consulted without undue delay to assess the need for treatment following an animal bite.

Although human rabies is rare in the United States, the risk of infection must be carefully and accurately assessed in all potential rabies exposure. Administration of rabies post-exposure prophylaxis is a medical urgency, not an emergency. The decision to treat a patient with a known, or suspected, rabies exposure is that of the patient and his or her physician. This decision is often made in consultation with the local or state health department.

Currently, Washington has no terrestrial animal reservoirs of rabies. Bats are the most commonly rabid animal in the state. Of 4061 Washington bats examined from 1960-1997, 358 (9%) were rabid. Rabid bats have been found in almost every county in the state. The virus likely occurs in all of the 16-18 bat species present in Washington. Other than bats, only eight animals from this state have tested positive for rabies since 1960. In 1976, an unvaccinated cat from Thurston County was found to be rabid. The following year, an unvaccinated dachshund tested positive for rabies. This was the last confirmed rabid dog in the state.

Two other domestic animals have been diagnosed with rabies since 1960: a horse from Benton County in 1992 and a llama from King County in 1994. The llama was infected with a bat variant of the rabies virus. The virus strain infecting the horse could not be determined for technical reasons. The only other animals to be identified as rabid in Washington since 1960 were four pet skunks. Two of the skunks were inappropriately imported into Washington and were likely infected out-of-state. The remaining two skunks were pets improperly given live attenuated rabies vaccine.

Reducing the risk of rabies in domestic dogs and cats and limiting contact with wild animals are central to the prevention of human rabies. Vaccination of all domestic dogs and cats coupled with the systematic removal of stray and unwanted, domestic animals that are at risk of exposure to rabid wildlife, are basic elements of a rabies control program. King County law requires vaccination of all owned dogs and cats with approved vaccines by a licensed veterinarian.

This manual is intended as a guide to assessing, managing and reporting of animal bites and potential rabies exposures. The basic elements of this process include:

- **Making an assessment of the human exposure;**
- **Recommending first aid and rabies prevention measures when indicated;**
- **Arranging animal testing when indicated;**
- **Reporting animal and bat bite encounters to Public Health**.

Section 2 - Important Phone Numbers

To Report and Receive Guidance for Assessing Rabies Exposure
Call Public Health - Seattle & King County 206-296-4774; after hours please follow the directions for contacting the public health official on call.

Rabies Testing of Potentially Rabid Animals
The public health laboratory system will test a suspected rabid animal for rabies if it has exposed a human. **This must be coordinated through the Public Health Department.**
Call Public Health – Seattle & King County to make arrangements: 206-296-4774.
Testing is conducted at the Public Health Lab (located at Harborview): 206-731-8950
and Washington State Public Health Laboratories (located in Shoreline): 206-361-2914.

Animal Control Agencies in Seattle and King County
Des Moines: 206-870-6549
King County: 206-296-7387, selection 2.
Renton: 425-430-7550
Seattle: 206-386-4254, extension 2

Questions on Rabies Vaccine or Immune Globulin (IG)
Call 206-296-4774 or e-mail: vaccineinfo@metrokc.gov.

Ordering Rabies Vaccine or Rabies Immune Globulin (IG)
Aventis-Pasteur 1-800-822-2463 (IMOGAM® and IMOVAX®))
Bayer Clinical Communications 1-800-288-8371 (BAYRAB® -- immune globulin)
Chiron 1-800-244-7668 (RabaVert® -- vaccine)

Public Information about Rabies or Rabies Prevention

1. Bats and rabies, **Public Health recorded information 206-296-4949, select 3, then select 9.**
2. **Rabies general fact sheet for patients**, http://www.doh.wa.gov/Topics/rabiesfct.html
   Produced by the Washington State Department of Health
3. **Rabies vaccine information for patients**,
   http://www.metrokc.gov/health/prevcont/hdcv.htm
   Produced by Public Health – Seattle & King County.
4. **Rabies information for patients**, http://www.metrokc.gov/health/prevcont/bats.htm.
   Produced by Public Health – Seattle & King County.
5. **CDC Web site –rabies information for patients**
   http://www.cdc.gov/ncidod/dvrd/rabies/

Section 3 - Definitions

Animal Exposure to Rabies - Any circumstance in which saliva or central nervous system (CNS) tissue from a rabid or potentially rabid animal has direct contact with the mucous membranes or through a break in the skin of a domesticated animal.

Confinement or Quarantine- Restriction of an animal to a building, pen, or other suitable escape-proof enclosure. The animal cannot be removed from confinement unless it is on a leash or under the immediate control of a responsible adult. At the first indication of the animal becoming ill, changing behavior, or refusing to eat or drink, it is the responsibility of the owner or custodian to notify the agent supervising the confinement and take the animal to a veterinarian for examination. If rabies is suspected, the animal should be immediately euthanized and the brain tested for rabies. Animal control and public health can order confinement or quarantine of animals.

Human Exposure to Bats (a.k.a. bat exposure) – Any direct physical contact between a human and a bat, unless the exposed person can be certain a bite, scratch, or mucous membrane exposure did not occur.

Bat bites may leave no mark and therefore not be noticed by the victim or the examining physician because bat teeth are tiny and razor sharp. Examining a person for evidence of a bat bite is unreliable and should NOT be used to determine if contact has occurred. In addition, persons handling a bat can be exposed to rabies through small or non-apparent cuts or rashes of the skin. Any potential physical or direct contact with a bat should be considered a rabies exposure.

Examples of rabies exposures due to direct physical contact with a bat include:

- A bat has bitten or scratched someone.
- A bat has been in direct contact with a person's skin.
- A bat is found in the room with an unattended child, intoxicated or mentally incapacitated person or pet and it is not known if direct contact with the bat occurred.
- A person wakes to find a bat in the room and is not certain if direct contact with the bat has occurred.

The only circumstance in which rabies post-exposure prophylaxis (PEP) is not recommended to persons with any of the above bat exposures is if the bat is captured, tested for rabies and found not to be rabid.

Human Exposure to Rabies – Any bite, scratch, or other situation in which saliva, or CNS tissue, of a potentially rabid animal entered, or could have entered, an open wound, fresh wound, or comes in contact with a mucous membrane by entering the eye, mouth or nose. Touching or handling a potentially rabid animal does not constitute an exposure unless wet saliva, or CNS tissue, entered a fresh, open wound or had contact with a mucous membrane. **An important exception is handling or touching a bat, which represents a presumed rabies exposure.** Handling an inanimate object that has had contact with a rabid animal does not constitute an exposure. Likewise, contact with the urine, feces, or blood of a potentially rabid animal does not constitute an exposure since rabies virus is primarily found in nerve tissue and saliva.

Provoked Attack or Provoked Bite - An attack is considered to be "provoked" if a domestic animal is in a situation or environment such that an expected reaction, from a veterinary perspective, would be to bite or attack. This includes, but is not limited to: invasion of an animal's territory; attempting to pet or handle an unfamiliar animal; startling an animal; running or bicycling past an animal; assisting an injured or sick animal; trying to capture an animal; or removing food, water, or other objects in the animal's possession or acting in an aggressive manner toward an animal. Consultation with the public health veterinarian may be helpful to determine if an attack was provoked.

Rabies - a severe, rapidly progressive, viral infection that affects the brain and nervous system. It almost always results in death once symptoms begin. Signs and symptoms of rabies include behavior changes, difficulty swallowing, convulsions, and paralysis. In Washington State, there have been two cases of human rabies since 1939; both due to bat rabies virus. An effective preventive treatment is available for rabies, but it must be started as soon possible after exposure to rabies virus for it to be effective. There is no effective treatment for someone once symptoms of rabies are present.

Rabies Post-Exposure Prophylaxis (PEP) - Use of rabies vaccine and, in persons who have not previously received a rabies immunization series, rabies immune globulin to prevent rabies infection after exposure to the rabies virus has occurred.

Rabies Immune Globulin (RIG) – a blood plasma product that contains a high titer of rabies antibody and gives rapid, temporary immunity against rabies. It is used as part of the rabies post-exposure prophylaxis regimen for rabies exposures in persons who have not previously received a rabies immunization series.

Rabies Vaccine – induces active immunity against rabies virus in which the immune system produces antibodies against rabies. This immune response takes approximately 7 to 10 days to develop and persists for 2 years or more.

Signs of Rabies in Animals – The following information describe behaviors that may indicate rabies infection in animals. The information is most applicable to dogs and cats. At times, animals, particularly large animals such as ruminants (cows, sheep, and goats) may develop paralytic or dumb rabies in which the animal is not agitated. In addition, there are numerous other common diseases and conditions of animals that can produce these behaviors and signs. **In cases where an evaluation of animal behavior is important in determining the management of a possible human exposure to rabies, consultation with the public health veterinarian is indicated**.

Behavior changes consistent with rabies include erratic conduct (a friendly dog becomes withdrawn or belligerent, an aloof animal becomes friendly); unusual aggression, excitation and agitation; difficulty with coordination and walking; depraved appetite (eating wood, soil, stones, plants, or other foreign objects); increased salivation, drooling or foaming at the mouth with head held characteristically downward; hoarse, throaty bark or snarl; muscular tremors or seizures (especially in cats); dilated pupils, vacant stare. In some animals rabies may cause varying degrees of paralysis, frequently beginning at the head or neck, causing jaws to hang open.

Wild Carnivore - Wild animals that eat meat as all or as part of their usual diet. These include, but are not limited to: bears, cougars, bobcats, wolves and wolf hybrid dogs, raccoons, coyotes, skunks, foxes.

Section 4 - General Procedures

1. **Assess rabies exposure using the appropriate decision tree** (attached). **In general:**

   - **If a bat or a wild carnivore (e.g. raccoon, skunk, or other) caused the exposure, but the animal is NOT available for rabies testing**, the patient requires rabies post-exposure prophylaxis (PEP).

   - **If a bat or a wild carnivore caused the exposure, and the animal is available for testing, the animal should be tested for rabies before PEP is recommended (unless the bite was to the head area)**. When a human is exposed to a rabid animal, rabies infection is likely to occur more quickly if the face and neck were exposed to rabies virus. This is because the virus has a shorter path to the spinal cord and brain. Potential rabies exposures to the face and neck are of the highest priority for assessment and management.

   - **If exposed by a dog, a cat, or a ferret, and the animal can be identified and observed for 10 days after the exposure occurred**, then the exposed patient should contact the appropriate animal control agency, and report the incident. This will assure that the animal is observed and confined. Animal control can also assess the rabies immunization status of the animal.

   - **If exposed by a dog, cat, or ferret, but the animal is not available for observation**, use the decision tree to determine if PEP is indicated. Usually PEP will not be necessary in these situations, but each situation should be evaluated carefully.

   - **If exposed by a rodent, lagamorph (rabbit, hare), or livestock,** use the decision tree to determine if PEP is indicated. Bites from these animals almost never require PEP. In all cases involving rodents, the health department should be consulted before a decision is made to initiate rabies PEP.

   - **For persons exposed while in a developing country**, rabies PEP is generally indicated.

   - **Signs of rabies in animals** – Behavior changes consistent with rabies include erratic conduct, unusual aggression, excitation, or agitation; difficulty with coordination and walking; depraved appetite (eating wood, soil, stones, plants, or other foreign objects); increased salivation, drooling or foaming at the mouth with head held characteristically downward; hoarse, throaty bark or snarl; muscular tremors or seizures (especially in cats); or dilated pupils, vacant stare. In some animals, rabies may cause varying degrees of paralysis, frequently beginning at the head or neck, causing jaws to hang open. At times, animals, particularly large animals (cows, sheep, goats) may develop paralytic or dumb rabies in which the animal is not agitated. **In situations where consultation regarding animal behavior is needed to make the appropriate management decision**, contact the Public Health Veterinarian at 206-296-4880.

2. **If post-exposure prophylaxis (PEP) is indicated**, follow guidelines in Section 5.

3. **Treatment of wounds**:
   - Immediate and thorough washing of all bite wounds and scratches with soap and water and a virucidal agent such as a povidone-iodine solution are important measures for preventing rabies. In studies of animals, thorough wound cleansing alone without other post-exposure prophylaxis has been shown to reduce markedly the likelihood of rabies.
   - Tetanus prophylaxis and antibiotics should be administered as indicated.

4. **Report to Public Health**. Known or suspected exposure to rabies is a reportable condition. Please call Public Health to report a case: 206-296-4774.

5. **Laboratory testing of animals** by the Public Health Laboratory is done when there is potential human exposure to rabies and the animal is available for testing. It is ESSENTIAL to notify Public Health (206-296-4774) in order for laboratory testing of animals to be arranged. Bats are generally tested at the Public Health Laboratory located at Harborview. Other animals are tested at the Washington State Department of Health Laboratory located in Shoreline.

6. **For any questions** regarding the assessment of rabies exposure or management of suspected rabies exposure, call Public Health – Seattle King County: 206-296-4774.

7. **Insurance considerations**. Most major insurers will cover rabies post-exposure prophylaxis when potential exposure to rabies is documented in the medical record. For patients who are paying privately, the cost of rabies biologics (rabies vaccine and rabies immune globulin) is approximately $1500-2000.

8. **Obtaining rabies vaccine and rabies immune globulin**. Vaccine (HDCV) may be ordered by physicians from Aventis-Pasteur in Swiftwater, PA: 1-800-822-2463. Intramuscular (IM) doses are priced at about $160 per dose.

   RIG is supplied as 2.0 or 10.0 mL vials that contain 150 IU of rabies antibody per mL. The volume of RIG to be administered is dependent on the weight of the patient. The dosage is 20 IU/kg (0.133 ml/kg) or 9 IU/lb (0.06 ml/lb). Therefore, a person who weighs 100 lbs requires 6mL of RIG. RIG may be obtained from Aventis-Pasteur, Swiftwater, PA (1-800-822-2463) and from Bayer Biological Products, Research Triangle Park, NC (1-800-288-8371). The cost of RIG is ~$80/mL. RIG that remains from partially used vials should be discarded immediately. Please consider this when making an order.

Section 5 – Rabies Post-Exposure Prophylaxis

These regimens are applicable for all age groups, including children

Vaccination status	Treatment	Regimen
Not previously vaccinated	Wound Cleaning	All post-exposure treatment should begin with immediate thorough cleansing of wounds with soap and water. If available, a virucidal agent such as a povidone-iodine solution should be used to irrigate the wounds.
	Rabies immune globulin (RIG)	Administer 20 IU/kg body weight. If anatomically feasible, the full dose should be infiltrated around the wound(s) and any remaining volume should be given IM at an anatomical site distant from the vaccine administration. RIG should not be administered in the same syringe as vaccine. Because RIG may partially suppress active production of antibody, no more than the recommended dose should be given.
	Rabies Vaccine*	Administer vaccine 1.0 mL IM in the deltoid.[†] Schedule: One each on days 0, 3, 7, 14, and 28.
Previously vaccinated[§]	Wound Cleansing	All post-exposure treatment should begin with immediate thorough cleansing of wounds with soap and water. If available, a virucidal agent such as a povidone-iodine solution should be used to irrigate the wounds.
	Rabies immune globulin (RIG)	RIG should NOT be administered.
	Rabies Vaccine*	Administer vaccine 1.0 mL IM in the deltoid.[†] Schedule: One each on days 0 and 3.

*Two rabies vaccines are licensed in the US: HDCV – human diploid cell vaccine and PCEC – purified chick embryo cell vaccine. Each is standardized to the same volume (1mL) per dose.

[†]The deltoid area is the only acceptable site for vaccination for adults and older children. For younger children, the outer aspect of the thigh may be used. Vaccine should never be administered in the gluteal area.

[§]Any person with a history of pre-exposure vaccination with HDCV or PCEC; prior post-exposure prophylaxis with HDCV or PCEC; or previous vaccination with any other type of rabies vaccine and a documented history of antibody response to the prior vaccination.

General

The essential components of rabies post-exposure prophylaxis (PEP) are wound treatment and the administration of both rabies immune globulin (RIG) and rabies vaccine as soon as possible after exposure (see table on page 8 for regimens). **The combination of RIG and vaccine is recommended for both bite and non-bite exposures, regardless of the interval between exposure and initiation of treatment**. Incubation periods of >1 year have been reported in humans. Thus, when a documented or likely exposure has occurred, post-exposure prophylaxis is indicated regardless of the length of the delay.

Studies conducted by CDC have documented that a regimen of one dose of RIG and five doses of rabies vaccine over a 28-day period is safe and induces an excellent antibody response in all recipients. When post-exposure prophylaxis has been properly administered, no treatment failures have occurred in the United States.

Rabies Immune Globulin Use

RIG is administered only once (i.e., at the beginning of rabies prophylaxis) to previously unvaccinated persons to provide immediate antibodies until the patient responds to the vaccine by actively producing antibodies. If RIG was not administered when vaccination was begun, it can be administered through the seventh day after the first dose of vaccine is given. See the table on page 8 for details of RIG administration.

Rabies Vaccine Use

Two rabies vaccines are currently available in the U.S (see table on page 8). Any one of the two can be given in conjunction with RIG at the beginning of post-exposure therapy. A regimen of five doses of vaccine should be administered intramuscularly (on day 0, 3, 7, 14, and 28). The first dose should be administered as soon as possible after exposure. Timing of the doses is important and arrangements should be made for doses to be given on weekends, if necessary. Note that the vaccine regimen involves only two doses for patients previously immunized for rabies (see table on page 8).

Adverse Reactions

Rabies Vaccine. Reactions after vaccination with the three currently licensed vaccines in the U.S. are less serious and less common than with previously available vaccines. In previous studies with HDCV, local reactions (e.g., pain, erythema, and swelling or itching at the injection site) have been reported among 30%–74% of recipients. Systemic reactions (e.g., headache, nausea, abdominal pain, muscle aches, and dizziness) have been reported among 5%–40% of recipients. Three cases of neurologic illness resembling Guillain-Barré syndrome that resolved without sequelae in 12 weeks have been reported. In addition, other central and peripheral nervous system disorders have been temporally associated with HDCV vaccine, but a causal relationship has not been established in these rare reports. An immune complex-like reaction occurred among approximately 6% of persons who received booster doses of HDCV 2–21 days after administration of the booster dose. The patients developed generalized urticaria, sometimes accompanied by arthralgia, arthritis, angioedema, nausea, vomiting, fever, and malaise. In no cases have these reactions been life threatening. This reaction occurred less frequently among persons who had received primary vaccination.

Rabies Immune Globulin. Local pain and low-grade fever might follow receipt of RIG. Although not reported specifically for RIG, angioneurotic edema, nephrotic syndrome, and anaphylaxis have been reported after injection of immune globulin (IG), a product similar in biochemical composition but without antirabies activity. These reactions occur so rarely that a causal relationship between IG and these reactions has not been established. Both formulations of RIG (BayRab and Imogam®Rabies-HT) undergo multiple viral clearance procedures during preparation. There is no evidence that any viruses have ever been transmitted by commercially available RIG in the United States.

Management of Adverse Reactions

Once initiated, rabies prophylaxis should not be interrupted or discontinued because of local or mild systemic adverse reactions to rabies vaccine. Usually, such reactions can be successfully managed with anti-inflammatory and antipyretic agents, such as ibuprofen or acetaminophen. When a person with a history of serious hypersensitivity to rabies vaccine must be revaccinated, antihistamines can be administered. Epinephrine should be readily available to counteract anaphylactic reactions, and the person should be observed carefully immediately after vaccination. Although serious systemic, anaphylactic, or neuroparalytic reactions are rare during and after the administration of rabies vaccines, such reactions pose a serious dilemma for the patient and the attending physician. A patient's risk of acquiring rabies must be carefully considered before deciding to discontinue vaccination. Advice and assistance on the management of serious adverse reactions for persons receiving rabies vaccines may be sought from Public Health (206-296-4774). All serious systemic, neuroparalytic, or anaphylactic reactions should be reported to the Vaccine Adverse Event Reporting System (VAERS) via a 24-hour toll-free telephone number.

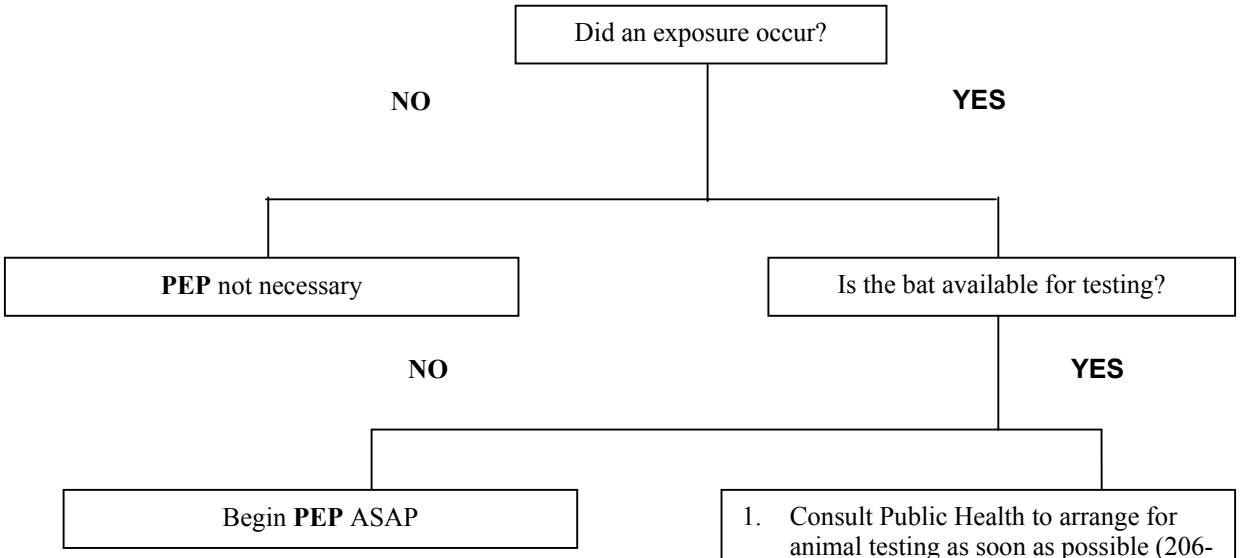
Precautions

Immunosuppression. Corticosteroids, other immunosuppressive agents, antimalarials, and immunosuppressive illnesses can interfere with the development of active immunity after vaccination. Immunosuppressive agents should not be administered during post-exposure therapy unless essential for the treatment of other conditions. When post-exposure prophylaxis is administered to an immunosuppressed person, it is important that a serum sample be tested for rabies antibody to ensure that an acceptable antibody response has developed.

Pregnancy. Because of the potential consequences of inadequately treated rabies exposure, and because there is no indication that fetal abnormalities have been associated with rabies vaccination, pregnancy is not considered a contraindication to postexposure prophylaxis.

Section 6 – Decision Trees to Assess When a Person Needs Rabies Post-Exposure Prophylaxis

DECISION TREE FOR BAT EXPOSURE



PEP = rabies post-exposure prophylaxis

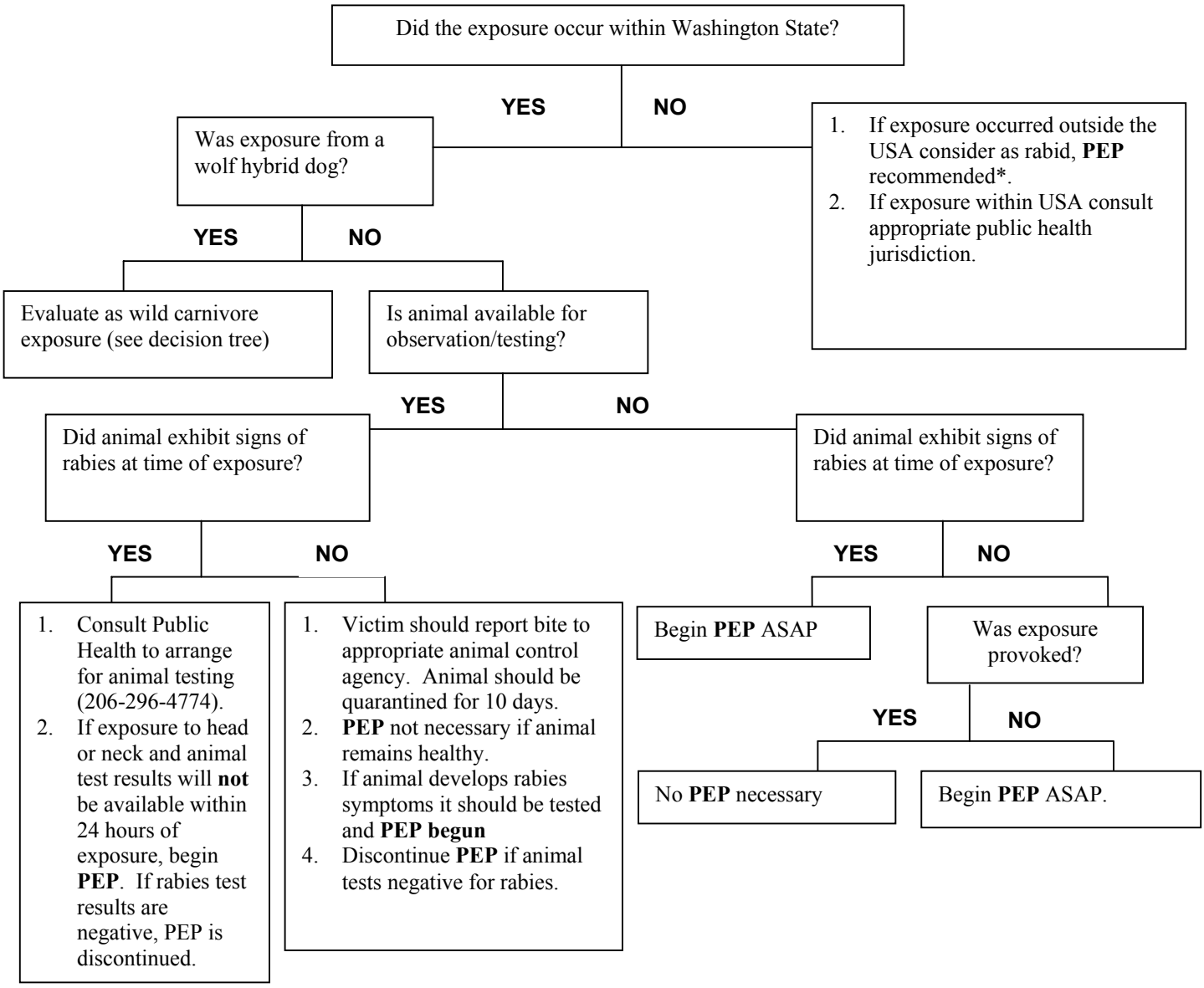
Human exposure to bats – Any direct physical contact between a human and a bat, unless the exposed person can be certain a bite, scratch, or mucous membrane exposure did not occur.

Bat bites may leave no mark and therefore not be noticed by the victim or the examining physician because bat teeth are tiny and razor sharp. Examining a person for evidence of a bat bite is unreliable and should NOT be used to determine if contact has occurred. In addition, persons handling a bat can be exposed to rabies through small or unapparent cuts or rashes of the skin. Any potential physical or direct contact with a bat should be considered a rabies exposure.

Examples of **rabies exposures** due to direct physical contact with a bat include:

- A bat has bitten or scratched someone.
- A bat has been in direct contact with a person's skin.
- A bat is found in the room with an unattended child, intoxicated or mentally incapacitated person or pet* and it is not known if direct contact with the bat occurred.
- A person wakes to find a bat in the room and is not certain if direct contact with the bat has occurred.
- The only circumstance in which PEP would not be recommended for the above exposures is if the bat is captured, tested for rabies and found not to be rabid.

DECISION TREE FOR DOG, CAT, OR FERRET EXPOSURE



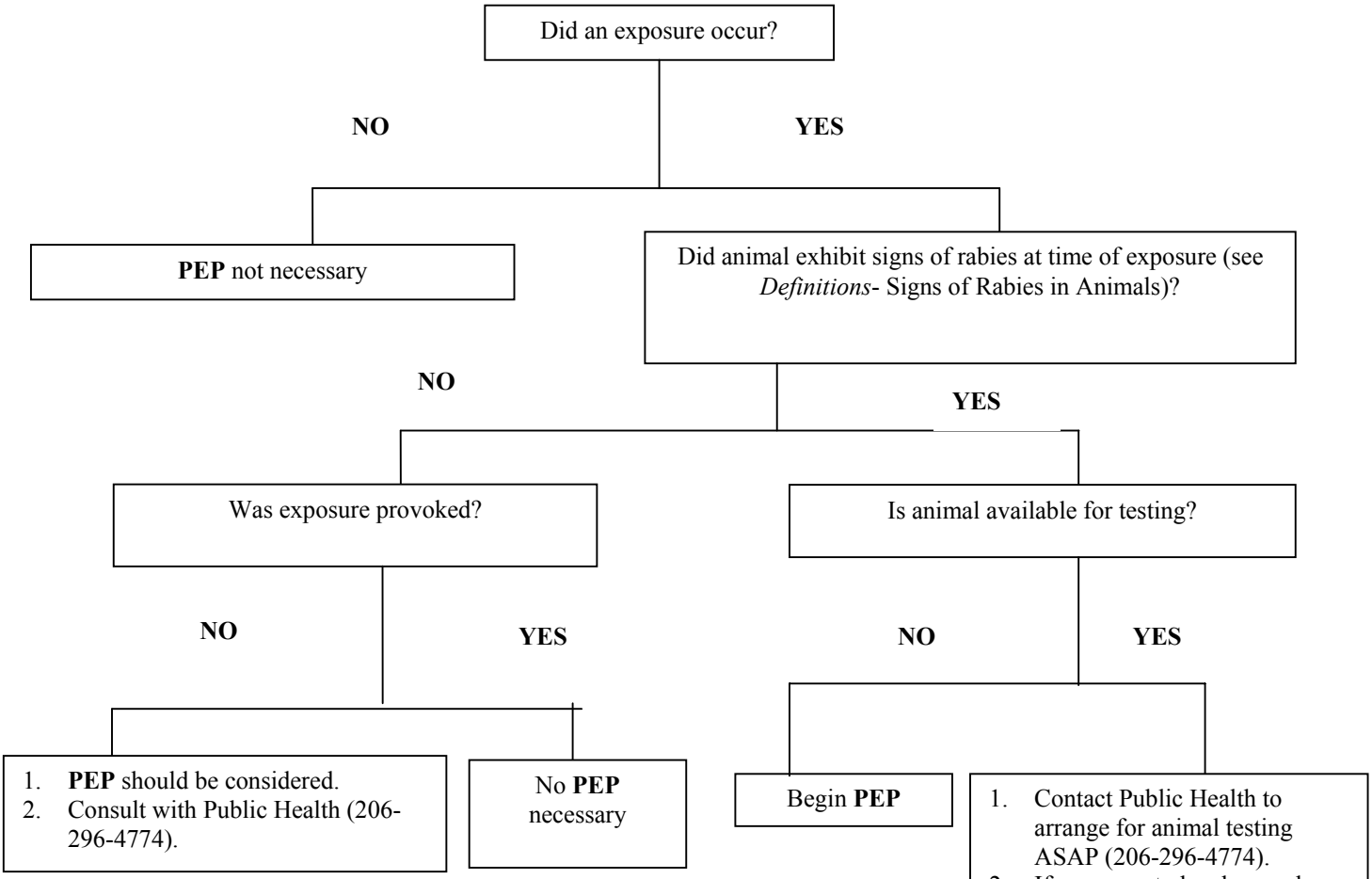
PEP = rabies post-exposure prophylaxis

*****Unless from an area known to be rabies free - consult with appropriate public health jurisdiction.

Human exposure to rabies – Any bite, scratch, or other situation in which saliva, or CNS tissue, of a potentially rabid animal entered, or could have entered, an open or fresh wound or comes in contact with a mucous membrane by entering the eye, mouth or nose. Touching or handling a potentially rabid animal does not constitute an exposure unless wet saliva or CNS tissue entered a wound or had contact with a mucous membrane. Handling an inanimate object that has had contact with a rabid animal does not constitute an exposure. Likewise, contact with the urine, feces, or blood of a potentially rabid animal does not constitute an exposure since rabies virus is primarily found in nerve tissue and saliva.

Provoked attack or bite – An attack is considered to be "provoked" if an animal is in a situation such that an expected reaction, from a veterinary perspective, would be to bite or attack. This includes: **invasion of the animal's territory, attempting to pet or handle an unfamiliar animal, startling an animal, running or bicycling past an animal, assisting an injured animal, trying to capture an animal, removing food, water, or other objects in the animal's possession or acting in an aggressive manner toward an animal.** Consultation with the Public Health Veterinarian may be helpful to determine if an attack was provoked (206-296-4880).

DECISION TREE FOR LIVESTOCK EXPOSURE
Including cows, goats, sheep, pigs, horses, llamas and others



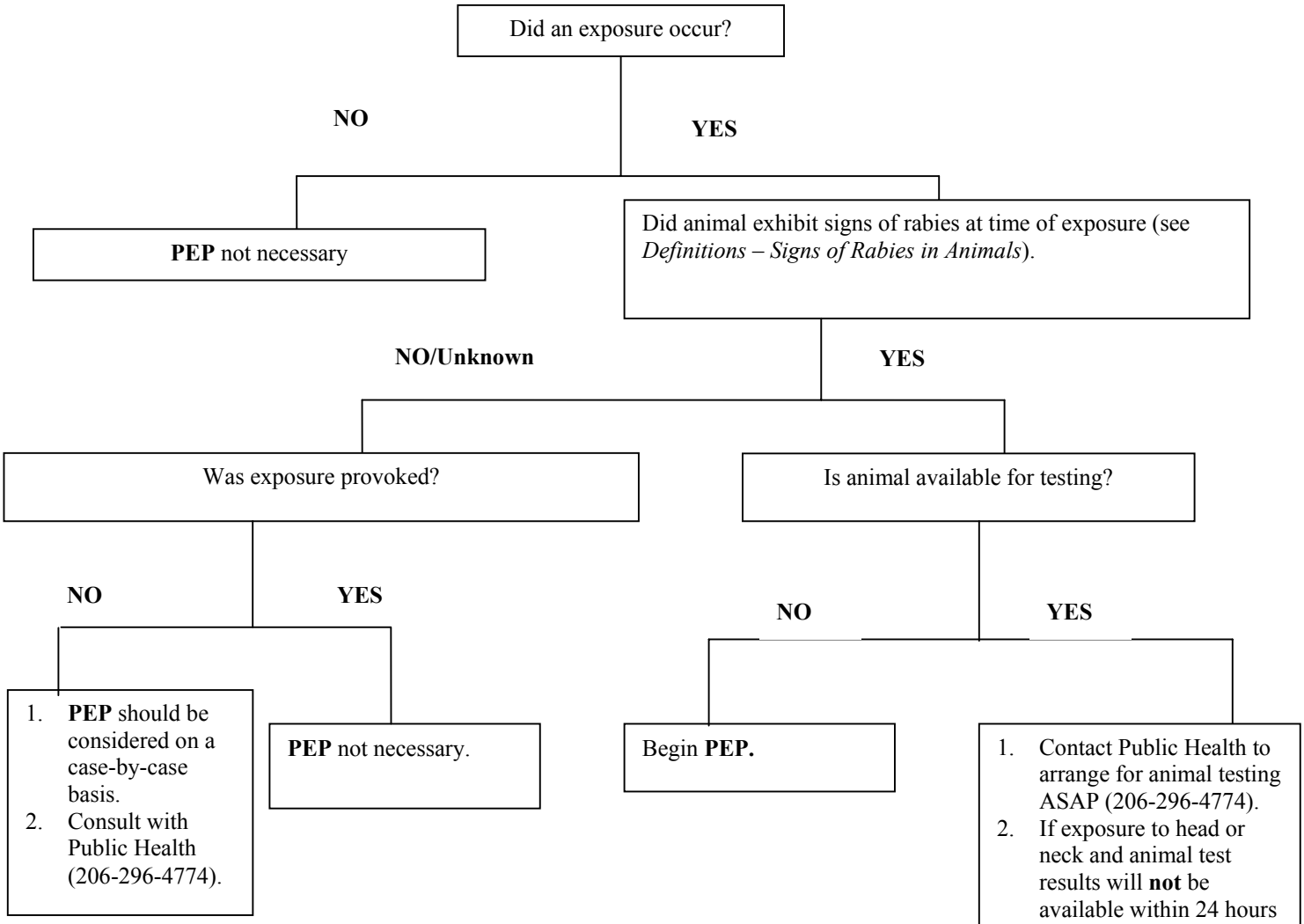
PEP = rabies post-exposure prophylaxis

Human Exposure to Rabies – Any bite, scratch, or other situation in which saliva, or CNS tissue, of a potentially rabid animal entered, or could have entered, an open or fresh wound or comes in contact with a mucous membrane by entering the eye, mouth or nose. Touching or handling a potentially rabid animal does not constitute an exposure unless wet saliva or CNS tissue entered a wound or had contact with a mucous membrane. Handling an inanimate object that has had contact with a rabid animal does not constitute an exposure. Likewise, contact with the urine, feces, or blood of a potentially rabid animal does not constitute an exposure since rabies virus is primarily found in nerve tissue and saliva.

Provoked Attack or Bite – An attack is considered to be "provoked" if an animal is in a situation such that an expected reaction, from a veterinary perspective, would be to bite or attack. This includes: **invasion of the animal's territory, attempting to pet or handle an unfamiliar animal, startling an animal, running or bicycling past an animal, assisting an injured animal, trying to capture an animal, removing food, water, or other objects in the animal's possession or acting in an aggressive manner toward an animal.** Consultation with the Public Health Veterinarian may be helpful to determine if an attack was provoked (206-296-4880).

DECISION TREE FOR RODENTS & LAGOMORPHS*

Including rates, mice, voles, moles rabbits, squirrels, oppossums



PEP = rabies post-exposure prophylaxis

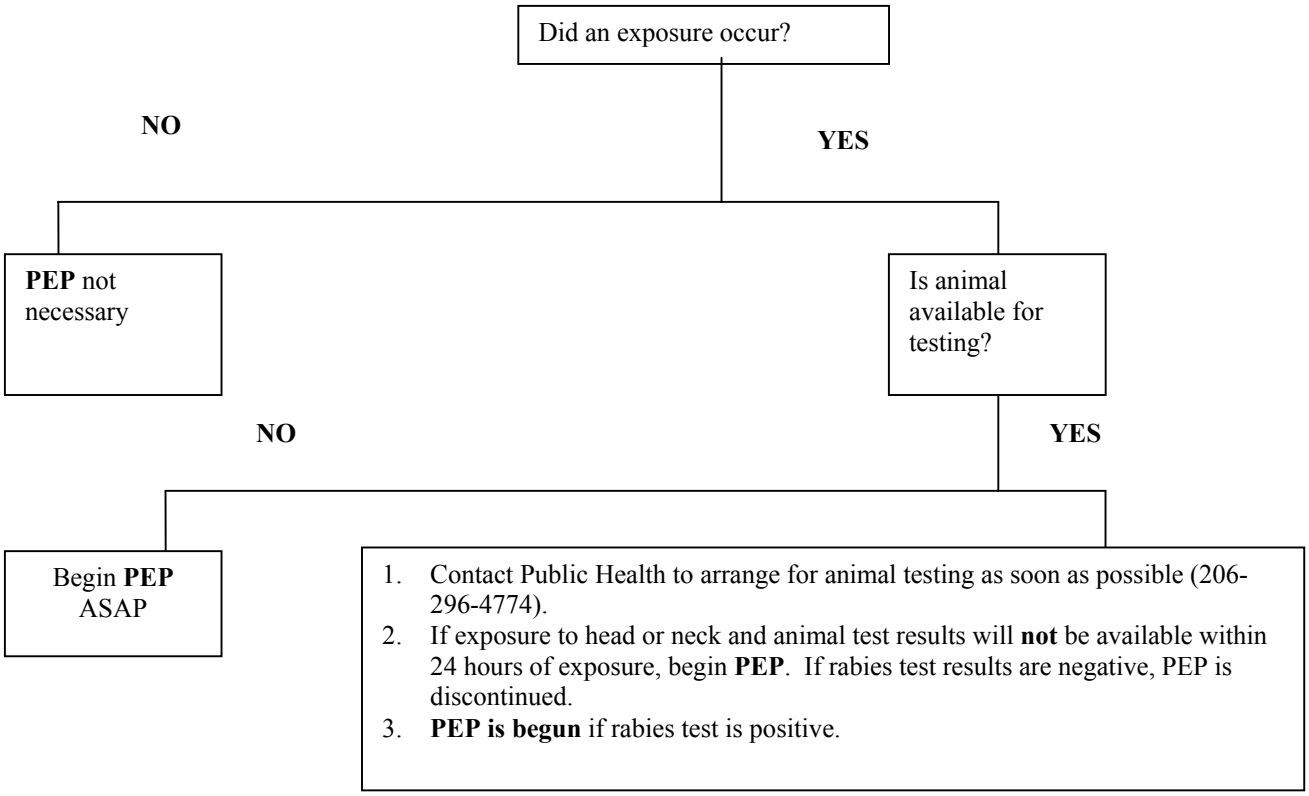
***These animals almost never develop rabies, have not been known to transmit rabies to humans and almost never require **PEP**.

Human Exposure to Rabies – Any bite, scratch, or other situation in which saliva, or CNS tissue, of a potentially rabid animal entered, or could have entered, an open or fresh wound or comes in contact with a mucous membrane by entering the eye, mouth or nose. Touching or handling a potentially rabid animal does not constitute an exposure unless wet saliva or CNS tissue entered a wound or had contact with a mucous membrane. Handling an inanimate object that has had contact with a rabid animal does not constitute an exposure. Likewise, contact with the urine, feces, or blood of a potentially rabid animal does not constitute an exposure since rabies virus is primarily found in nerve tissue and saliva.

Provoked Attack or Bite – An attack is considered to be "provoked" if an animal is in a situation such that an expected reaction, from a veterinary perspective, would be to bite or attack. This includes: **invasion of the animal's territory, attempting to pet or handle an unfamiliar animal, startling an animal, running or bicycling past an animal, assisting an injured animal, trying to capture an animal, removing food, water, or other objects in the animal's possession or acting in an aggressive manner toward an animal.** Consultation with the Public Health Veterinarian may be helpful to determine if an attack was provoked (206-296-4880).

DECISION TREE FOR WILD CARNIVORE EXPOSURE

Including wolves and wolf hybrid dogs, raccoons, coyotes, skunks, and foxes.



PEP = rabies post-exposure prophylaxis

Human Exposure to Rabies – Any bite, scratch, or other situation in which saliva, or CNS tissue, of a potentially rabid animal entered, or could have entered, an open or fresh wound or comes in contact with a mucous membrane by entering the eye, mouth or nose. Touching or handling a potentially rabid animal does not constitute an exposure unless wet saliva or CNS tissue entered a wound or had contact with a mucous membrane. Handling an inanimate object that has had contact with a rabid animal does not constitute an exposure. Likewise, contact with the urine, feces, or blood of a potentially rabid animal does not constitute an exposure since rabies virus is primarily found in nerve tissue and saliva.

Section 7 - Reporting Animal Bites to Animal Control

The local animal control authority should be notified of any animal bite. Animal control can assist with capture of the animal, place the animals under confinement, and work with the animal owner to control the behavior of the animal.

The bite victim should be advised to contact the appropriate animal control agency directly so that a complete description and location of the animal can be obtained.

The following are the telephone numbers of the animal control authorities in Seattle and King County:

Des Moines: 206-870-6549
King County: 206-296-7387, selection 2
Renton: 425-430-7550
Seattle: 206-386-4254, extension 2

If quarantine or confinement of the animal is required, the animal's owner is responsible for managing the 10-day quarantine period. Animal control will provide quarantine housing in situations in which the owner is not able to provide and will also provide it if there is reason to believe that the owner will not comply with the required procedures. During the quarantine period the owner is responsible for notifying the Animal Control Officer of unusual behaviors, symptoms or death of the animal.

The Public Health animal bite investigator will review animal bite assessments in which quarantine was imposed and will check with animal control and the animal owner to assess the status of the animal at the end of the 10-day quarantine period.

Section 8 - Management of Animals That Have Been Bitten by Other Animals

Animals that have been bitten by another animal that is known or suspected to be rabid should be referred to a veterinarian for veterinary assessment and treatment. If a wild animal is injured, please refer the caller to the local animal control, or to a local wildlife rehabilitator. Consult the telephone directory for these numbers. There is no testing available for animals that can prove immunity to rabies.

For additional advice in King County, the King County Public Health Veterinarian is available at 206-296-4880, Monday through Friday, from 8 a.m. to 5 p.m. Veterinarians may order rabies testing of animals suspected to be rabid and that have bitten other animals. Rabies testing for animals is available through the Oregon State Veterinary Laboratory. This laboratory can be contacted for shipping advice and fee structure by calling (541) 737-3261. **The Public Health laboratory system *only* performs rabies testing when a human exposure to rabies has occurred.**

Appendix A – Information for Health Care Providers: Rabies Exposure Assessment and Rabies Vaccine

1. Who should consider rabies pre-exposure rabies immunization?

Pre-exposure immunization may be offered to persons in high-risk groups, such as veterinarians, animal handlers, certain laboratory workers, and persons spending time (e.g. 1 month or more) in foreign countries where rabies is a constant threat. Persons whose vocational or avocation pursuits bring them into contact with potentially rabid dogs, cats, foxes, skunks, bats, or other species at risk of having rabies should also be considered for pre-exposure prophylaxis.

Pre-exposure prophylaxis is given for several reasons. First, it may provide protection to persons with inapparent exposures to rabies. Second, it may protect persons who might have a delay in obtaining post-exposure therapy after an exposure. Finally, although it does not eliminate the need for additional therapy after a rabies exposure, it simplifies therapy by eliminating the need for rabies immune globulin and decreasing the number of doses of vaccine needed. This is of particular importance for persons at high risk of being exposed in countries where the available rabies immunizing products may carry a higher risk of adverse reactions.

Pre-exposure immunization does not eliminate the need for prompt post-exposure prophylaxis; it only reduces the post-exposure regimen.

Criteria for Pre-exposure Immunization* **			
Risk category	**Nature of risk**	**Typical populations**	**Pre-exposure regimen**
Continuous	Virus present continuously, often in high concentrations. Aerosol, mucous membrane, bite or non bite exposure possible. Specific exposures may go unrecognized.	Rabies research lab workers.* Rabies biologics production workers.	Primary pre-exposure immunization course. Serology every 6 months. Booster immunization when antibody titer falls below acceptable level.*
Frequent	Exposure usually episodic, with source recognized, but exposure may also be unrecognized. Aerosol, mucous membrane, bite or non bite exposure	Rabies diagnostic lab workers,* spelunkers, veterinarians, and animal control and wildlife workers in rabies epizootic areas.	Primary pre-exposure immunization course. Booster immunization or serology every 2 years.**
Infrequent (greater than population-at-large)	Exposure nearly always episodic with source recognized. Mucous membrane, bite, or non bite exposure.	Veterinarians and animal control and wildlife workers in areas of low rabies endemicity. Certain travelers to foreign rabies epizootic areas. Veterinary students.	Primary pre-exposure immunization course. No routine booster immunization or serology.
Rare (population-at-large)	Exposure always episodic, mucous membrane, or bite with source recognized.	U.S. population-at-large, including individuals in rabies-epizootic areas.	No pre-exposure immunization.

*Judgment of relative risk and extra monitoring of immunization status of lab workers are the responsibility of the laboratory supervisor (see U.S. Department of Health and Human Services Biosafety in Microbiological and Biomedical Laboratories, 1984).
**Pre-exposure booster immunization consists of one dose of HDCV, 1.0 ml/dose, IM (deltoid area). Acceptable antibody level is 1:5 titer (complete inhibition in RFFIT at 1:5 dilution). Boost if titer falls below 1:5.
***Source: Centers for Disease Control: Human Rabies Prevention - United States, 1999: Recommendations of the Advisory Committee (ACIP) MMWR 48 (No. RR-1): 1-21.

2. What vaccines are used for pre-exposure immunization?

There are two rabies vaccines licensed for use in the United States as appropriate for pre-exposure situations. Human Diploid Cell Vaccine (HDCV) is available in an intra-muscular (IM) formulation. HDCV is an inactivated virus vaccine prepared from fixed rabies grown in MRC-5 human diploid cell culture. The vaccine is produced in France (Merieux Institute's IMOVAX® RABIES) and is distributed by Aventis-Pasteur (800-VACCINE). The virus is inactivated with B-propiolactone. The vaccine is available in a 1.0 ml single-dose vial of lyophilized vaccine with accompanying diluent. Since neither the vaccine nor diluent contain preservatives, the reconstituted vaccine must be used immediately.

RabAvert® is a Purified Chick Embryo Cell Vaccine (PCEC) and is available in a single dose vial that is reconstituted in the vial with the accompanying diluent to make a final volume of 1.0 ml. It is produced by Chiron Corporation. It can be ordered directly from the company at (800) 244-7668.

All of these vaccines are safe and effective when used as indicated. The full 1.0 ml dose of any of these products can be used for both pre-exposure and post-exposure treatment. Since most of the vaccine administered in the United States is HDCV (Imovax®), from here forward, we will reference this vaccine exclusively.

3. What is the recommended method for administering pre-exposure rabies immunization?

Three 1.0 ml injections of HDCV should be given intramuscularly in the deltoid muscle, one on each of days 0, 7, and 21 or 28. In a study in the United States, more than 1,000 persons received HDCV according to this regimen; antibody was demonstrated in the sera of all subjects when tested by the rapid fluorescent-focus inhibition test (RFFIT). Other studies have produced comparable results. Because the antibody response following the recommended vaccination regimen with HDCV has been so satisfactory, routine post-vaccination serology is not recommended.

4. What guidelines are used locally to determine if someone needs post exposure treatment?

The following recommendations are only a guide. In applying them, take into account the animal species involved, the circumstances of the bite or other exposure to the animal's saliva, the vaccination status of the animal, and presence of rabies in the geographic region where the bite occurred. In Washington, rabies is endemic among bats.

Rabies Post-Exposure Prophylaxis Guide

Animal species	Condition of animal at time of attack	Treatment of exposed person
Dog Cat, Ferret	Healthy and available for ten days of observation. If animal becomes sick or dies within the 10 days of observation, have the animal tested for rabies.	Should not begin prophylaxis unless animal develops clinical signs of rabies[1,2]
Dog Cat, Ferret	Known to be rabid or suspected to be rabid (provoked or unprovoked bite) or if the status of the animal is unknown, and the bite was unprovoked. Bites that occurred in a developing country should be considered suspected rabid as animals are not often immunized against rabies.	Treatment indicated. Give RIG and HDCV as indicated. Report incident to Public Health, (206) 296-4774.
Bat	Regard as rabid unless proven by laboratory tests that the bat was not rabid.	Treatment is indicated if there is a known, or reasonable probability, that direct contact with the bat occurred, give RIG and HDCV. Report incident to Public Health, (206) 296-4774.
Skunk, Coyote, Raccoon, Bobcat, Bear, Fox, and Other Carnivores	Regarded as rabid unless animal proven negative by laboratory tests.	Consider immediate vaccination
Livestock, Rodents, And Lagomorphs (Rabbits And Hares)	Consider individually. Call Public Health as necessary for guidance. Bites from squirrels, hamsters, guinea pigs, gerbils, chipmunks, rats, mice, other rodents, rabbits, and hares almost never call for antirabies prophylaxis.	

[1]All bites and wounds should be thoroughly cleansed immediately with soap and water. If antirabies treatment is indicated, both rabies immune globulin (RIG) and human diploid cell rabies vaccine (HDCV) should be given as soon as possible.

[2]During the usual holding period of 10 days, begin treatment with RIG and HDCV at first sign of rabies in a dog, cat, or ferret. The symptomatic animal should be killed immediately and tested. Holding for observation is not recommended. Discontinue vaccine if immunofluorescence test results of the animal are negative.

5. What post-exposure rabies prophylaxis is recommended for a person who previously completed a pre-exposure immunization regimen and who is exposed to a confirmed or suspected rabid animal?

When a person is exposed to rabies and has previously received a three dose vaccination series of HDCV, or has previously demonstrated rabies antibody, two IM doses (1.0 ml each) of HDCV in the deltoid muscle should be administered. Give one dose immediately and one three days later. Rabies immune globulin (RIG) is not indicated.

If the immune status of a partially vaccinated person is not known, a full post-exposure antirabies treatment (RIG plus five doses of HDCV) will be necessary. In such cases, if antibody can be demonstrated in a serum sample collected before the final three doses of vaccine are given, treatment can be discontinued once at least two post-exposure doses of HDCV have been administered. Since serologic tests are only performed out of state, it may be difficult to obtain the necessary results in time to avoid giving the last three rabies vaccine doses.

6. What is the recommended post-exposure prophylaxis for persons with no previous rabies immunization or with an inadequate rabies antibody titer?

Post-exposure antirabies immunization should always include administration of both RIG and HDCV with one exception. Persons who have been previously immunized with the recommended pre- or post-exposure regimens using HDCV, or other vaccines, and who have documented adequate rabies antibody titer may receive only vaccine. Consult question number

For all other situations, the combination of RIG and rabies vaccine is recommended for both bite and non-bite exposures, regardless of the interval between the exposure and the initiation of post-exposure prophylaxis (PEP). Begin PEP as soon as possible after exposure for maximum protection.

Five 1 ml (IM) doses of HDCV should be given intramuscularly in the deltoid muscle. The first dose of IM Rabies Vaccine should be given as soon as possible after the exposure; an additional dose should be given on days 3, 7, 14, and 21 or 28 after the first dose. Because the antibody response following the recommended vaccination regimen with HDCV has been so satisfactory, routine post-vaccination serologic testing is not recommended. In unusual instances, as when the patient is known to be immunosuppressed, serologic testing is indicated.

RIG is dosed according to weight and is administered only once, at the beginning of antirabies prophylaxis, to provide immediate, protective antibodies until the patient responds to HDCV by active production of antibodies. Rabies Immune Globulin, Human (RIG) produced by the Bayer Company (BAYRAB®) and Adventis Pasteur (IMOGAM® RABIES-HT). These are anti-rabies gamma globulins concentrated by cold ethanol fractionation from plasma of hyperimmunized human donors. Rabies neutralizing antibody content is standardized to contain 150 international units (IU) per ml. It is supplied in 2 ml (300 IU) and 10 ml. (1,500 IU) vials for pediatric and adult use, respectively.

If RIG was not given when rabies vaccination was begun, it should be administered as early as possible, but no later than the seventh day after the first dose of vaccine was given. From the eighth day on, RIG is not indicated, since an antibody response to the vaccine is presumed to have occurred. The recommended dose of RIG is 20 IU/kg or approximately 9 IU/lb of body weight. If anatomically feasible, the full dose of RIG should be thoroughly infiltrated in the area around the wound, the remainder should be administered intramuscularly. RIG should be administered into a different intramuscular site from HDCV. Because RIG may partially suppress active production of antibody, no more than the recommended dose of RIG should be given.

7. How often should booster doses of rabies vaccine be administered?

Persons who work with live rabies virus in research laboratories or vaccine production facilities and are at risk of inapparent exposure should have the rabies antibody titer of their serum determined every 6 months; booster doses of vaccine should be given, as needed, to maintain an adequate titer.

Laboratory workers who handle rabies diagnostic tests, and spelunkers, veterinarians, animal control and wildlife officers who work in areas where animal rabies is epizootic, should have boosters doses of rabies vaccine (IM or ID) every 2 years, or have their serum tested for rabies antibody every 2 years and, if the titer is inadequate, have a booster dose. International travelers, veterinarians and animal control and wildlife officers, working or traveling in areas of low rabies endemicity, do not require routine booster doses of HDCV after completion of the primary pre-exposure immunization.

8. What adverse reactions may occur in persons receiving Human Diploid Cell Vaccine (HDCV) and Human Rabies Immune Globulin (RIG)?

HDCV

In studies using five doses of HDCV, local reactions, such as pain, erythema, and swelling or itching at the injection site, were reported in about 30 to 74% of vaccine recipients. Systemic reactions, such as headache, nausea, abdominal pain, muscle aches, and dizziness were reported in about 5 to 40% of vaccine recipients. Three cases of neurologic illness resembling Guillain-Barre' syndrome that resolved without sequelae within 12 weeks have been reported. In addition, other central and peripheral nervous system disorders have been temporally associated with HDCV vaccine, but a causal relationship has not been established in these rare reports.

An "immune complex-like" serum sickness reaction has occurred among approximately 6% of persons who received booster doses of HDCV. The illness, characterized by onset 2-21 days post booster dose, presents with a generalized urticaria and may also include arthralgia, arthritis, angioedema, nausea, vomiting, fever, and malaise. This reaction has occurred less frequently among persons receiving primary vaccination. The reactions have been associated with the presence of betapropiolactone-altered human albumin in the HDCV and the development of immunoglobulin E (IgE) antibodies to this allergen.

Once initiated, post-exposure rabies prophylaxis should not be interrupted or discontinued because of local or mild systemic adverse reactions to rabies vaccine. Usually such reactions can be successfully managed with anti-inflammatory and antipyretic agents. When a person with a history of serious hypersensitivity to rabies vaccine must be revaccinated, antihistamines can be administered. Epinephrine should be readily available to manage anaphylactic reactions.

Serious systemic anaphylactic or neuroparalytic reactions occurring during the administration of rabies vaccines pose a serious dilemma for the attending physician. A patient's risk of developing rabies must be carefully considered before deciding to discontinue vaccination.

All serious reactions to rabies vaccine should be reported to the Vaccine Adverse Event Reporting System (VAERS). This can be done locally by telephoning Public Health (206) 296-4774 to make a report or by calling the national hotline at (800) 822-7967.

RIG

Local pain and low-grade fever may follow receipt of RIG. Although not reported specifically for RIG, angioneurotic edema, nephrotic syndrome, and anaphylaxis have been reported after injection of immune serum globulin (ISG), a product similar in biochemical composition, but without antirabies activity. These reactions occur so rarely that the causal relationship between ISG and these reactions is not clear.

Both formulations of RIG undergo multiple viral clearance procedures during preparation. There is no evidence that any viruses have ever been transmitted by commercially available RIG in the United States.

9. What additional precautions should be taken when administering HDCV?

Persons with history of hypersensitivity to vaccines or vaccine components should be given rabies vaccines with caution. When a patient with a history suggesting hypersensitivity to HDCV must be given that vaccine, antihistamines can be given; epinephrine should be readily available to counteract anaphylactic reactions, and the person should be carefully observed.

Corticosteroids, other immunosuppressive agents, and immunosuppressive illnesses can interfere with the development of active immunity and predispose the patient to vaccine failure. Immunosuppressive agents should not be administered during post-exposure therapy, unless they are essential for the treatment of other conditions. When rabies post-exposure prophylaxis is administered to persons receiving steroids or other immunosuppressive therapy, it is important that, at the completion of the vaccination series, serologic testing for rabies antibody is done.

10. What considerations exist for international travelers receiving rabies vaccines?

When an international traveler is recommended to have rabies pre-exposure prophylaxis, the IM dose/route of administration provides sufficient antibody response to overcome the immune system interference that antimalarial drugs such as chloroquine phosphate and mefloquine may cause.

11. Can pre-exposure and post-exposure rabies prophylaxis be safely administered during pregnancy?

Because of the potential consequences of an inadequately treated rabies exposure, and limited data which fail to implicate that fetal abnormalities are associated with rabies vaccination, pregnancy is not considered a contraindication to post-exposure prophylaxis. If there is substantial risk of exposure to rabies, pre-exposure prophylaxis may also be indicated during pregnancy.

12. How may rabies vaccine (HDCV) be ordered?

HDCV may be ordered (by physicians) from Aventis-Pasteur, Discovery Drive, Swiftwater, Pennsylvania 18370, or by phoning 1-800-822-2463. There are no shipping charges for regular, 2 day-delivery. Overnight delivery is available for a fee of approximately $20.00. No minimum order is required. IM doses are priced at about $120 per dose.

13. How may RIG be obtained?

RIG may be ordered from the manufacturer. RIG is supplied as 2.0 or 10.0 mls vials that are standardized to contain 150 international unit (IU) of rabies neutralizing antibody per ml. The volume of RIG to be administered is dependent on the weight of the recipient. The dosage is 20 IU/kg (0.133 ml/kg) or 9 IU/lb (0.06 ml/lb). Therefore, a person who weighs 100 lbs. requires 6 ml. of RIG. When administering RIG, it is important not to exceed the recommended dosage.

BAYRAB® may be obtained from Bayer Clinical Communications, Biological Products, 79 T.W. Alexander Drive, Research Triangle Park, NC, telephone, 1-800-288-8371. It may also be shipped by a pharmaceutical wholesaler.

IMOGAM® RABIES-HT may be obtained from Aventis-Pasteur, Discovery Drive, Swiftwater, Pennsylvania 18370 or by telephone, 1-800-822-2463. IMOGAM® RABIES-HT is heat-treated and contains no preservatives. RIG that remains from partially used vials should be discarded immediately. Please consider this when making an order for this product. The cost for RIG is approximately $50 to $60 per ml.

14. Are there any other ways to obtain RIG and rabies vaccine urgently?

A few local hospital pharmacies carry a supply. Public Health - Seattle & King County clinic sites do not carry RIG, but some clinic sites carry a supply of HDCV. Call (206) 296-4774 for information.

15. Can patients get rabies vaccinations at Public Health - Seattle & King County?

Public Health administers pre-exposure doses of HDCV at cost through its travel clinic locations only. No pre-authorization for pre-exposure rabies vaccine doses is necessary.

Public Health clinics can administer IM rabies vaccine for post-exposure purposes at any of its clinic locations with prior authorization from, and arrangement by, Public Health's Communicable Disease Epidemiology and Immunization section, (206-296-4774). Please call if you plan to refer a patient to Public Health. Public Health does not usually stock supplies of RIG, which is available through community health care providers.

Persons who are insured (especially those who are covered by a preferred provider or health maintenance organization) should be referred according to specific plan guidelines to obtain vaccination. Public Health resources should be reserved for patients who do not have insurance coverage or who lack access to a health care provider. Public Health charges patients for treatment.

16. What is the standard test for determining rabies antibodies? Where may sera be sent for rabies antibody testing?

This serologic test is not available locally. Serologic samples must be collected and then prepared for shipment to one of the laboratories below. At least 2.0 ml of serum should be sent for testing. Specimens should be shipped on ice packs in a leak-proof package. Express shipping (i.e. UPS, FedEx, DHL) should be used to send the specimen. Please call the laboratories for more specific instructions on how to submit specimens for testing.

Rabies Laboratory/RFFIT
Mosier Hall
Kansas State University
1800 Denison Avenue
Manhattan KS 66506-5600
(785) 532-4483, Fax (785) 532-4474
http://www.vet.ksu.edu/depts/dmp/service/index.htm

Atlanta Health Associates
309 Pirkle Ferry Road, Suite D-300
Cumming, GA 30040
(770) 205-9091 or 1-800-717-5612, Fax: 770-205-9021
http://www.atlantahealth.net/

17. What is considered the minimally acceptable rabies antibody titer following immunization?

The Centers for Disease Control and Prevention (CDC, U.S. Public Health Service) considers a complete viral neutralization at a 1:5 or greater titer by the rapid fluorescent-focus inhibition test (RFFIT) as acceptable at 1:5 dilution or greater; the World Health Organization specifies 0.5 IU/mL or more acceptable.

18. Is any treatment indicated if an individual is accidentally exposed to modified live rabies virus (MLV) vaccines (vaccines given to animals)?

Individuals may be accidentally exposed to attenuated rabies virus while administering MLV vaccines to animals. While there have been no reported human rabies cases resulting from exposure to needlesticks or sprays with licensed MLV vaccines, vaccine-induced rabies has been observed in animals given MLV vaccines. Absolute assurance of a lack of risk for humans, therefore, cannot be given. The best evidence for a low risk, however, is the absence of recognized cases of vaccine-associated disease in humans despite frequent accidental exposures.

Currently available MLV animal vaccines are made with one of two attenuated strains of rabies virus: high egg passage (HEP) Flury strain or Street Alabama Dufferin (SAD) strain. The HEP Flury and SAD virus strains have been used in animal vaccines for over 10 years without evidence of associated disease in humans; therefore, post-exposure treatment is not recommended following exposure to these types of vaccine by needlestick or sprays.

Because data is insufficient to assess the true risk associated with any of the MLV vaccines, pre-exposure immunization, and periodic boosters are recommended for all persons who deal with potentially rabid animals or who frequently handle animal rabies vaccines.

References used to prepare this document

CDC. Human rabies prevention - United States, 1999 recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 1999; 48(RR-1): 1-21.

Public Health Seattle & King County Immunization Manual, 2001.

Chin, J, ed. *Control of Communicable Diseases Manual*. 17th ed. Washington DC: American Public Health Association, 2000.

Pickering, LK, ed. Red Book: *2000 Report of the Committee on Infectious Diseases*. 25th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2000.

Appendix B – Rabies and Animal Bite Information for Patients

Public Health - Seattle & King County
Fact Sheet

Bats and Rabies

❑ WHAT IS IT?

- ✓ Rabies is a viral disease of the brain and nervous system that is always fatal once symptoms begin. In Washington State, most cases of animal rabies are in bats. Most bats, however, do not carry rabies, and most of the bats tested for rabies in Washington are not infected.
- ✓ A healthy bat typically avoids any contact with humans or animals. Because rabies is a life threatening disease, caution must be taken when bats come into contact with humans or animals.

❑ WHAT KIND OF CONTACT WITH A BAT COULD TRANSMIT RABIES?

- ✓ Rabid bats frequently lose their ability to fly, or do not fly well. Rarely, a bat that has rabies can be aggressive. Rabies is transmitted when an infected bat bites or scratches a person's skin. Bat bites may not be noticed because bat teeth are very tiny and razor sharp. Examining a person for evidence of a bat bite is unreliable, because a bat bite can be no bigger than a needle prick. Therefore, *any* physical (or direct) contact with a bat should be considered a possible rabies exposure.
- ✓ Bats flying overhead and bats that have not had direct physical contact with humans or animals do not pose a risk for transmitting rabies. If someone wakes up to find a bat in the room, or a bat is found in the room of an unattended small child, an intoxicated or mentally incapacitated person, or pet, then the possibility exists that a bat bite, scratch, or direct contact, may have occurred. These situations and any bat bite, scratch, or other direct contact with a bat are considered rabies *exposure*s.

❑ What should be done if a bat may have bitten, scratched or had direct contact with a person, child or pet?

- ✓ It is very important to attempt to capture a bat that is known or suspected to have bitten, scratched, or had direct contact with a person or pet, so that it can be tested for rabies. Testing is important because testing can confirm whether rabies vaccination is necessary to prevent rabies.
- ✓ If direct contact is likely to have occurred, but the bat is not available for testing, Public Health recommends that the exposed person receive treatment to prevent rabies. Often rabies treatment can be avoided if the bat is tested for rabies.

❑ What is the best way to capture a bat?

- ✓ Bats should be captured **only** if there has been direct contact with a person or pet, or if the bat was found in the room of someone who might have been bitten. Once these bats are captured, they should be tested for rabies infection. **Do not release a live bat, or throw out a dead bat, that has bitten or scratched, or has had direct contact with a person, unless Public Health has told you that it will not be necessary to test the bat.**
- ✓ The following ideas are offered as ways to safely capture a bat:
  - Never handle bats with bare hands. Wear thick gloves to pick up the bat or pick up the bat with a shovel, or dust pan
  - Wait until the bat has landed. Place an empty can or wastebasket over the bat and slide cardboard underneath these to contain the bat.
  - If the bat is still flying, try striking it with a broom, or tennis racket, in order to knock it down. You can also try to capture it in a net.

- If a bat is found dead, place the bat in a sealed can or jar, or place it in a plastic bag that is within another bag.
- Bats should be carefully placed in a container that can be sealed (such as a coffee can or plastic container with a lid).
- If you need help capturing a bat, certain pest control or nuisance wildlife companies can help you. Be certain that the company is familiar with Public Health guidelines and is willing to turn the bat over for rabies testing if necessary.
- Bats that will be sent to a laboratory for testing should be refrigerated (not frozen) until the laboratory can begin testing.
- In King County, contact Public Health at 206-296-4774 to determine whether a captured bat should be tested for rabies. If you capture a bat after regular work hours, call Public Health on the next workday. Keep the bat in a sealed container, as described above, and store in a cooler or refrigerator until you have contacted Public Health.
- If Public Health has told you that it is not necessary to test the bat, and the bat is alive, you can release the bat outside and away from your home.
- If Public Health tells you that it will not be necessary to test the bat, but the bat is injured, your local animal control office may be able to help. A preferred option is to take the injured bat to the PAWS Wildlife Center. PAWS can be reached by calling 425-787-2500.

❑ How to arrange to get a bat tested when it has been in contact with a human or animal:

✓ **To Test Bats in Contact with Humans -** In King County contact Public Health's Communicable Disease Control, Epidemiology and Immunization Section at 206-296-4774 during regular work hours to determine if testing is necessary.

✓ **To Test Bats in Contact with Animals -** Consult your veterinarian for advice. The veterinarian may decide to send the bat to the Oregon State University Diagnostic laboratory for rabies testing. Veterinarians who need information about how to submit to submit animals for rabies testing in King County can contact the Public Health Veterinarian at 206-296-4880.

❑ What should be done if the bat is confirmed or suspected to be rabid and a direct exposure has occurred?

✓ **When a Human Has Been Exposed**- Public Health recommends that the exposed person begin treatment to prevent rabies as soon as possible. Rabies preventive treatment includes five doses of rabies vaccine, and one dose of rabies immunoglobulin, given according to a fixed schedule over a 28-day time period.

✓ The vaccination regimen is very safe and effective, but the vaccinations must be given on specific days. Rabies vaccinations can be given in most medical offices or clinics. Health care providers can order rabies vaccinations directly from the companies that make rabies vaccine. Some local emergency rooms carry both the rabies immunoglobulin and rabies vaccine.

✓ **When a Dog, Cat, or Ferret Has Been Exposed-** Dogs, cats, and ferrets that are currently vaccinated against rabies should be revaccinated immediately, kept under the owner's control, and observed for 45 days. Unvaccinated animals should either be humanely put to death or undergo a strict, and difficult to maintain, 6-month quarantine. These precautions must be taken because an animal can develop rabies as long as 6 months after the exposure. If the 6-month quarantine is chosen, the animal should be vaccinated one month before release from the quarantine.

❑ What can be done to reduce the chance that people or pets will come in direct contact with bats?

- ✓ Bats found on the ground may be ill or simply immature flyers that are likely to fly away at dusk. If necessary, these bats can be moved to a quiet place where they will not come in contact with people or pets. Do not touch the bat with your bare hands.
- ✓ Bats may enter homes accidentally or to live. If there are bats in a home, it is important to get them out to avoid possible exposures to rabies. A single bat most likely arrived through an open door or windows without screens. Multiple occurrences may indicate that additional steps are needed to keep the bats out of your home. Pest control services can help get rid of bats in the home. The following are services that are experienced with bat control: Northwest Nuisance Wildlife Control (1-888-868-3063); Pest Control Northwest (425-823-2676); Critter Control (206-431-6833).
- ✓ Vaccinate your pets to protect them against rabies. In King County, all dogs and cats are required to have rabies vaccinations by the time they are six months of age and a year later. Depending on the brand of vaccine used, dog and cat rabies vaccinations may be good for either one or three years. Veterinarians provide a written certificate when an animal has been vaccinated against rabies.

Public Health - Seattle & King County
Fact Sheet

Immune Globulin

❑ What is Immune globulin?

- ✓ Immune globulin (Ig) is a sterilized solution obtained from pooled human blood plasma that contains the immunoglobulins (or antibodies) to protect against the infectious agents that cause various diseases.
- ✓ Antibodies are substances in the blood plasma that fight infections. Our bodies create antibodies (or immunity) against disease-causing agents when infections occur. These antibodies can protect us from becoming ill if we are exposed to the same infectious agents sometime in the future.
- ✓ When someone is given IG, that person is using other people's antibodies to help fight off or prevent an illness from occurring. This protection is temporary and should not be confused with getting an immunization, which provides longer-term protection.
- ✓ Special Ig formulations are produced from donors with high levels of antibodies against hepatitis B (Hepatitis B Immune Globulin-HBIG), rabies (Rabies Immune Globulin-RIG), tetanus (Tetanus Immune Globulin-TIG) and varicella (chickenpox) (Varicella Zoster Immune Globulin-VZIG). Immune globulins are sometimes called gamma globulins or immune serum globulins.

❑ Since Immune globulin is made from blood plasma, can I get AIDS or other diseases from it?

- ✓ Prior to use, each unit of Ig is tested for evidence of the virus that causes acquired immune deficiency syndrome (AIDS), hepatitis B & C, and many other blood-borne viruses and bacteria. Units that carry these viruses and/or bacteria are eliminated. In addition, several chemical processes are used to sterilize the product to eliminate other disease-causing germs.
- ✓ There is no evidence that Ig causes disease, despite several studies that have looked into this. No cases of AIDS have been due to the receipt of Ig. Immune globulin administered in the United States is a very safe and effective preventive against disease.

❑ Who should receive Immune globulin?

- ✓ People exposed to or in danger of being exposed to certain infectious diseases (i.e., hepatitis, measles, rabies, tetanus and varicella) may be offered injections with the appropriate Ig.
- ✓ Ig recipients should realize that, although the product is highly effective, it is not 100% effective in preventing disease. Some individuals may develop the infection they were exposed to in spite of having received Ig. That is why additional precautions may need to be taken to further protect the person or others from disease. For example, if you were exposed to hepatitis B, you would want to avoid donating blood for six months after receiving Ig in case the Ig wasn't effective in preventing the disease from occurring.

❑ Who should not receive Immune globulin?

- ✓ Ig should not be given to individuals who are known to have had serious allergic reactions to thimerosal (for example, a generalized body rash, difficulty breathing, and swollen lips), or other immune globulins.
- ✓ Individuals with blood clotting disorders that would prevent them from safely obtaining an injection and those with IgA deficiency (a rare blood disorder) should not receive Ig.
- ✓ Because Ig may interfere with development of good protection after measles, mumps, rubella or varicella vaccination, people who have received Ig should not receive these vaccines for the next three months. If Ig is given during the two-week period following an immunization against measles, mumps, rubella or varicella, the immunization should be repeated three months after the Ig was received.

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❑ How is Immune globulin administered?

- ✓ Ig is given by injection into a muscle. The dosage and the site for the injection vary according to the amount of Ig required and the size of the person (typically this is in the buttocks for adults, and the leg or arm for children.)

❑ What are the side effects of Immune globulin?

- ✓ Local pain, tenderness, itching, and swelling at the injection site is to be expected and typically goes away within a day. Non-prescription medications such as aspirin or acetaminophen can be used to lessen any discomfort.
- ✓ Shock-like reactions to intramuscularly administered Ig are rare. Recipients are encouraged to wait 20 minutes in the clinic after the injection.

❑ How long can I expect the protection from Immune globulin to last?

- ✓ Ig administered by injection persists in the body for several months. The protective effect of the injection disappears after approximately three months. If risk of exposure to disease continues individuals may require additional Ig.

If your blood is tested after receiving Ig, it may show evidence of the antibodies to various diseases during the three months after injection. Be sure to let any health care provider you see in the next three months know you have received Ig.

Appendix C -- Resources

King County and Washington State Resources

1. **Rabies Prevention in Washington State**: **A Guide for Practitioners**.
   Contains information on the clinical features, epidemiology, laboratory testing of animals, and prevention of rabies. http://healthlinks.washington.edu/nwcphp/rabies/
   Produced by the Washington State Department of Health & Northwest Center for Public Health Practice
2. **Information for Health Care Providers: Rabies Exposure Assessment and Rabies Vaccine**, Produced by Public Health – Seattle & King County.
   http://www.metrokc.gov/HEALTH/providers/epidemiology/rabiesqa.htm
3. **Rabies general fact sheet for patients**, http://www.doh.wa.gov/Topics/rabiesfct.html
   Produced by the Washington State Department of Health
4. **Rabies vaccine information for patients**,
   http://www.metrokc.gov/health/prevcont/hdcv.htm
   Produced by Public Health – Seattle & King County
5. **Bats and rabies information for patients**,
   http://www.metrokc.gov/health/prevcont/bats.htm
   Produced by Public Health – Seattle & King County
6. **King County Animal Control**, http://www.metrokc.gov/lars/animal

National Resources

1. **Comprehensive Review of Rabies Prevention** (MMWR) including details of PEP regimens and where to order rabies vaccine and RIG.
   CDC. Human rabies prevention – United States, 1999 recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 1999; 48(RR-1): 1-21.
   http://www.cdc.gov/mmwr/preview/mmwrhtml/00056176.htm
2. **Compendium of Animal Rabies Prevention** and Control, 2003. National Association of State Public Health Veterinarians. This document contains information about how veterinarians would prevent and control rabies in animals.
   http://www.avma.org/pubhlth/rabcont.asp
3. **Centers for Disease Control and Prevention Web site on rabies**. Contains extensive background information on the epidemiology of rabies and the occurrence of rabies in the United States. This web site contains visual displays of the distribution of major terrestrial animal rabies in the United States and discusses how rabies might present itself in humans and animals. Lists recent human rabies case examples. Offers a section for children to educate them about rabies. http://www.cdc.gov/ncidod/dvrd/rabies/
4. **Aventis-Pasteur** (IMOGAM® and IMOVAX®) http://www.us.aventispasteur.com/
5. **Bayer Biological Products** (BAYRAB®)
   http://www.bayerbiologicalsusa.bayerhealthcare.com/
6. **Chiron Corporation (**RabaVert®) http://www.chiron.com/
7. **Kansas State University, Rabies Laboratory** (serologic testing)
   http://www.vet.ksu.edu/depts/dmp/service/index.htm
8. **Atlanta Health Associates** (serologic testing) http://www.atlantahealth.net/